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CALLITRICHE IN THE NEW WORLD

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(continued from p. 182)

14. *C. quindiensis*, n. sp., fructibus 1.4–1.5 mm. latis, 1.2–1.4 longis, nitidis, non alatis, sessilibus (Figs. 14a–14c).—**Colombia**: pool on moor, alt., 4100–4300 m., Paramo del Quindío, Dept. Caldas, Aug. 15–20, 1922, *Pennell & Hazen 9850* (TYPE in GH; ISOTYPES in US, NY).

As is true for any species of the Sect. *Callitriche* known from a single collection, we can only describe the habit and vegetative characters of that individual, and speculate on possible variation by analogy with other species.

The type collection is from a pool on the high paramo. Several large clumps of intertwined stems on each sheet suggest that it made a dense growth in the water. All the lower leaves are gone, only the spatulate or oblanceolate-obovate leaves 1–2.5 mm. wide remaining on the uppermost few centimeters of stem. The stems appear coarser than is common in the genus. Both stems and leaves have blackened extensively; this may be due to a fleshy nature, or it may only reflect the difficulties of drying a wet mass of aquatic vegetation in the mountains of Colombia.

15. *C. hamulata* Kütz. apud Reichenb. *Icon. Fl. Germ.* 5: 1, pl. CXXX, figs. a–c. 1841; Hegelm. *Monogr. Callit.* 56. 1864; Hegelm. *Verhandl. Bot. Ver. Brandenburg* 9: 29. 1867; Samuelsson, *Fest. Carl Schröter* 627. 1925. *C. autumnalis* Kütz. in Reichenb. *Pl. Crit.* 9: pl. DCCCXC. 1831, not L. *C. intermedia* Hoffm. according to Pearsall, *Rep. Bot. Soc. & Exch. Club Br. Isles* 10: 865. 1935. (*C. intermedia* Hoffm. *Deutsch. Fl.* 2. 1791 is not identifiable, only the foliage being described. Hoffmann refers to Schkuhr, *Bot. Handb. t. I*, fig. e. 1791, which, again, might be any of several species).—Fruit 0.9–1.2 mm. wide and about as high, with sides nearly parallel and faces rather flat; margins of carpels with a narrow but well-differentiated and even

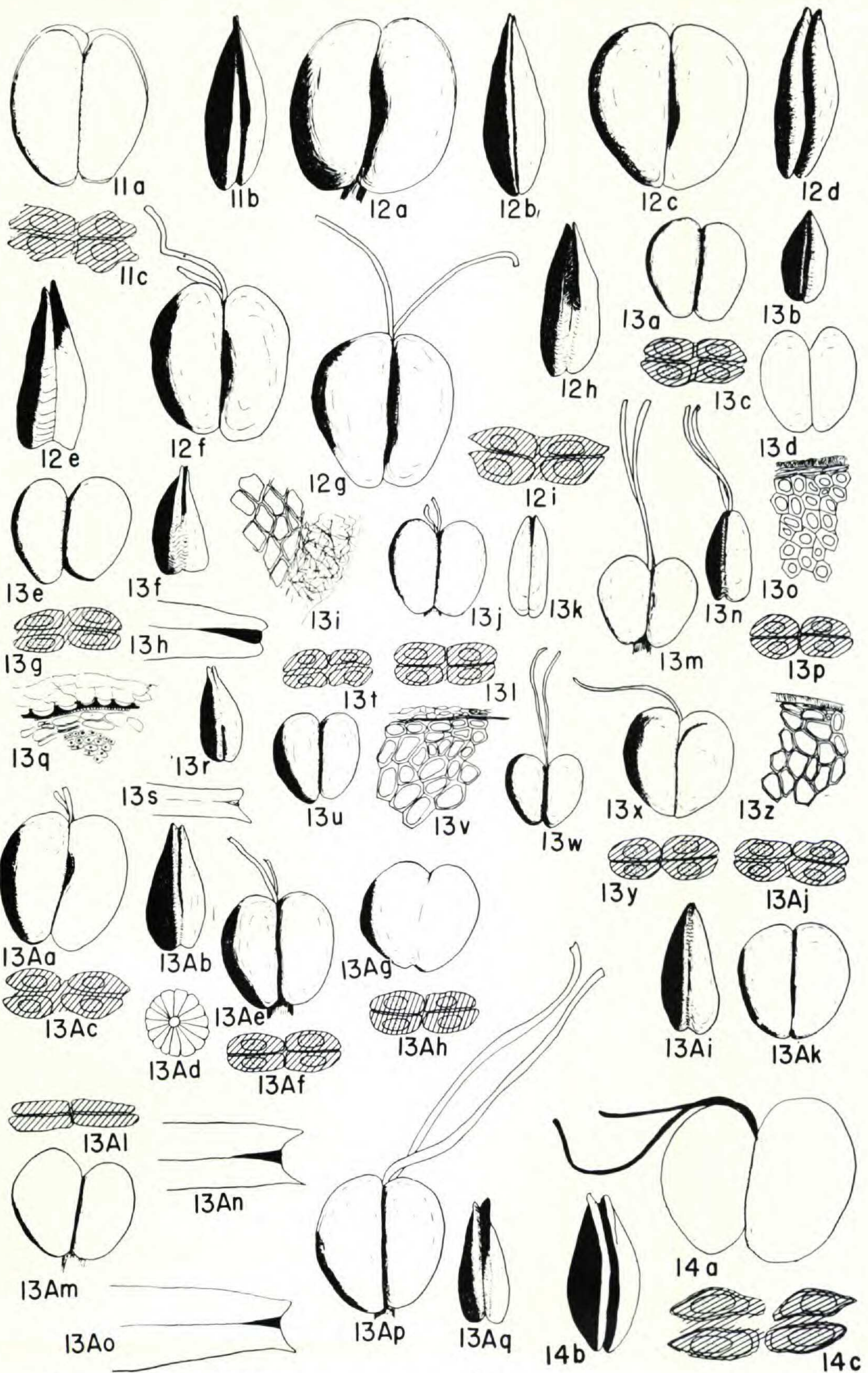
wing (Fig. 15b); commissural groove very wide, often flat across its base (Fig. 15a); style long and sharply reflexed from well below the summit of the carpel (Fig. 15b), often caducous but usually leaving a visible stub; leaves variable but predominantly of the linear submersed type; linear 1-nerved leaves deeply bidentate at tip, with the enlarged gland-like tip of the nerve slightly excurrent (Fig. 15d).—Europe; but one clearly identifiable collection seen from the New World, in **Greenland**: Vest-Grønland, Nordkysten af Sarqardleg, 68° 42' N. 52° 30' W., Aug. 13, 1932, *Porsild* (MO, US, GH).

The variations in leaf type and habit, closely paralleling those of *C. heterophylla*, are described by Glück, l. c. This species is generally more slender and delicate than *C. heterophylla*, more closely resembling *C. anceps* in this respect. The single collection cited above has only linear 1-nerved leaves and looks like Fig. 6 on Plate 1168. There are other similar plants from Greenland, with fruits less well-developed; they may be this species or may be *C. anceps*.

 PLATE 1173

(Numbers same as in keys and descriptions)

11. *C. albomarginata*. 11a. Face of fruit, × 30. Chile, *Reich* in 1899 (GH). 11b. Edge view of fruit, × 30. Same collection. 11c. Cross-section of fruit, × 30. Same collection.
12. *C. heteropoda*. 12a. Face of fruit, × 30. Bolivia, *Kuntze* (NY). 12b. Edge view of fruit, × 30. Same collection. 12c. Face of fruit, × 30. Bolivia, *Buchtien* 8436 (NY). 12d. Edge view of fruit, × 30. Same collection. 12e. Edge view of fruit, × 30. Same collection. 12f. Face of fruit, × 30. Same collection (US). 12g. Face of fruit, × 30. Bolivia, *Bang* 1887 (US). 12h. Edge view of fruit, × 30. Same collection. 12i. Cross-section of fruit, × 30. Same collection.
13. *C. heterophylla* var. *heterophylla*. 13a. Face of fruit, × 30. New York, *Muenschler & Bechtel* 257 (US). 13b. Edge view of fruit, × 30. Same collection. 13c. Cross-section of fruit, × 30. Same collection. 13d. Face of fruit, × 30. Maryland, *McAtee* 2697 (US). 13e. Face of fruit, × 30. Virginia, *McAtee* 3379 (US). 13f. Edge view of fruit, × 30. Same collection. 13g. Cross-section of fruit, × 30. Same collection. 13h. Leaf tip, × 30. Same collection. 13i. Portion of wing and face of fruit, × 187.5. Virginia, *Robinson* 323 (GH). 13j. Face of fruit, × 30. Tennessee, *McDougal* 1261 (US). 13k. Edge view of fruit, × 30. Same collection. 13l. Cross-section of fruit, × 30. Same collection. 13m. Face of fruit, × 30. Tennessee, *Svenson* 10117 (US). 13n. Edge view of fruit, × 30. Same collection. 13o. Portion of wing and face of fruit, × 187.5. Same collection. 13p. Cross-section of fruit, × 30. Same collection. 13q. Section of pericarp, seed-coat, endosperm and embryo, × 187.5. From section of fresh material from Baxter's Hollow, Baraboo, Wisconsin. 13r. Edge view of fruit, × 30. Maine, *Harvey* 345-1 (US). 13s. Leaf tip, × 30. Same collection. 13t. Cross-section of fruit, × 30. Same collection. 13u. Face of fruit, × 30. Same collection. 13v. Portion of wing and face of fruit, × 187.5. Same collection. 13w. Face of fruit, × 30. Louisiana, *Palmer* 7403 (US). 13x. Face of fruit, × 30. Arkansas, *Haas* 2006 (US). 13y. Cross-section of fruit, × 30. Same collection. 13z. Portion of wing and face of fruit, × 187.5. Same collection.
- 13A. *C. heterophylla* var. *Bolanderi*. 13Aa. Face of fruit, × 30. Washington, *Piper* 686 (US). 13Ab. Edge view of fruit, × 30. Same collection. 13Ac. Cross-section of fruit, × 30. Same collection. 13Ad. Peltate scale from leaf, × 30. Oregon, *Nelson* 2095 (GH). 13Ae. Face of fruit, × 30. Oregon, *Hall* 461 (MO). 13Af. Cross-section of fruit, × 30. Oregon, *Nelson* 2095 (GH). 13Ag. Face of fruit, × 30. California, *Bioletti* (NY). 13Ah. Cross-section of fruit, × 30. Same collection. 13Ai. Edge view of fruit, × 30. California, *Newbery* (US). 13Aj. Cross-section of fruit, × 30. Same collection. 13Ak. Face of fruit, × 30. Same collection. 13Al. Cross-section of fruit, × 30. California, *Bolander* 4528 (US). 13Am. Face of fruit, × 30. Same collection. 13An. Leaf tip, × 30. Same collection. 13Ao. Leaf tip, × 30. Same collection. 13Ap. Face of fruit, × 30. California, *Tracy* 4038 (NY). 13Aq. Edge view of fruit, × 30. Same collection.
14. *C. quindensis*. 14a. Face of fruit, × 30. Colombia, *Pennell & Hazen* 9850 (US). 14b. Edge view of fruit, × 30. Same collection. 14c. Cross-section of fruit, × 30. Same collection.



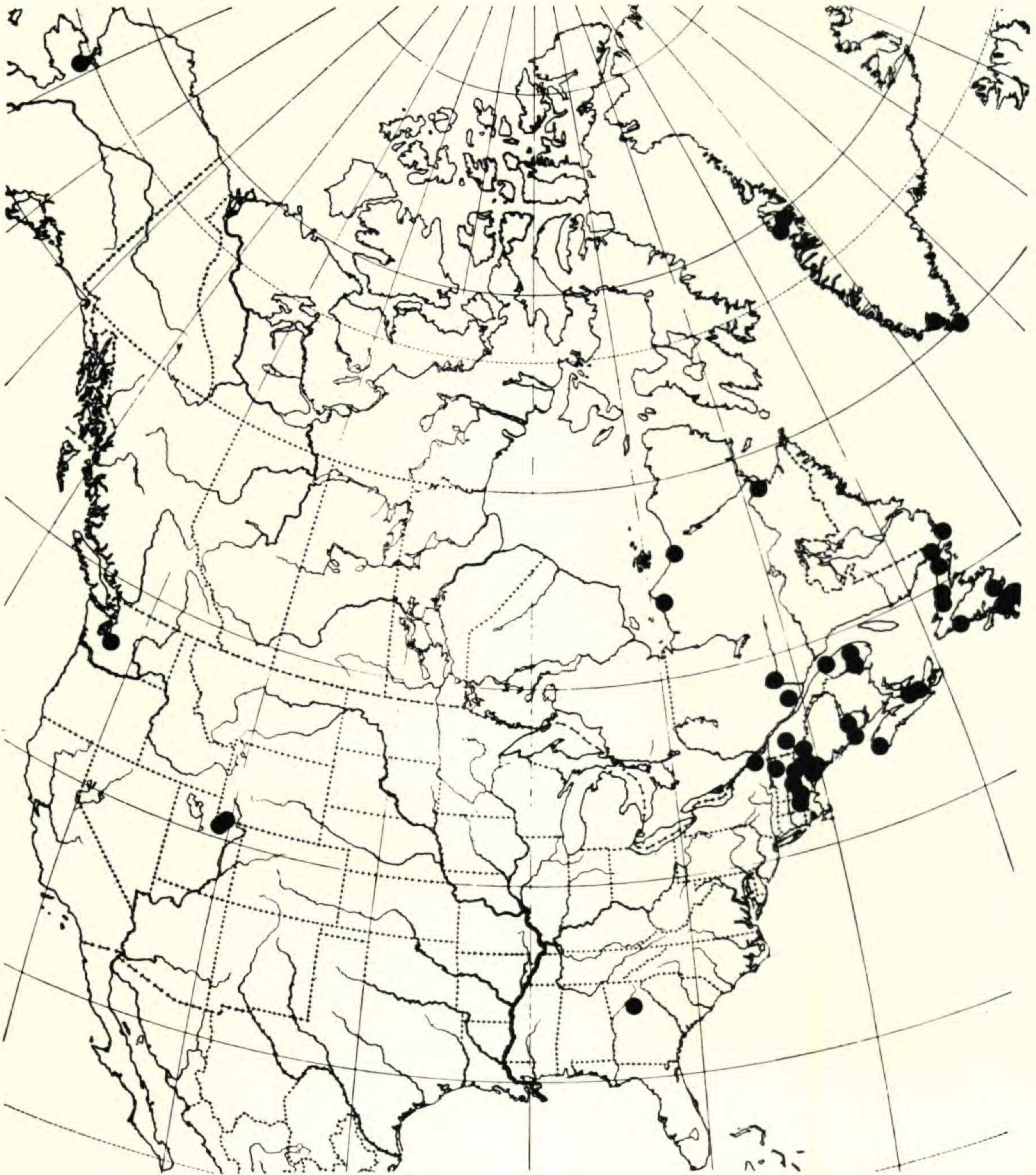
CALLITRICHE. 11, *C. ALBOMARGINATA*. 12, *C. HETEROPODA*. 13, *C. HETERO-PHYLLA*. 14, *C. QUINDIENSIS*.

16. **C. anceps** Fernald, RHODORA 10: 51. 1908; Fernald in Gray's Manual, ed. 8: 974. 1950.—Fruits 0.7–1.0 mm. wide, 0.6–1.1 mm. high, the sides nearly straight and parallel (Figs. 16b, 16d, 16h) or somewhat rounded (Figs. 16f, 16i); mericarps with rounded margins (Figs. 16a, 16c, 16g, 16j), wingless or very narrowly winged (Fig. 16i); edges of carpels usually in contact (Fig. 16a), rarely with a shallow commissural groove (Fig. 16j); styles erect or ascending, caducous or persistent; leaves sometimes all linear and 1-nerved (Plate 1169, Figs. 3, 5, 6, 7, 9) or all broad and rounded (Plate 1169, Fig. 4), or with both types on the same plant, or tongue-like on semiterrestrial individuals (Plate 1169, Fig. 1); linear 1-nerved leaves bidentate at tip, with the enlarged gland-like end of the vein slightly exerted (Fig. 16e).—Western Greenland to northern New England, rarely to Georgia in the mountains, and from Alaska to Washington and the mountains of Utah.—**Greenland:** S. Disko, Godhavn, 69° 15' Lat. bor., Aug. 31, 1923, *Porsild* (GH, NY); Kangikitsum Quingua, 60° 18' N., July 24, 1925, *Porsild & Porsild* (MO); Frederiksdal, 60° 0' N., July 25, 1925, *Porsild & Porsild* (GH, US); S. Disko, near Arktisk Station, 69° 15' N., Aug. 6, 1929, *Porsild* (GH, CM, US, MO); east coast of Disko Island, Mudderbugtsdalen, Aug. 4–5, 1937, *Porsild 391* (GH). **Labrador:** Battle Harbor, Aug. 26, 1928, *Bishop 409* (GH); Battle Harbor, Aug. 9, 1911, *Williamson 673* (NY); Blanc Sablon River, Straits of Belle Isle, Aug. 2, 1910, *Fernald & Wiegand 3648* (GH) and *3649* (GH, NY); Blanc Sablon River, Straits of Belle Isle, Sept. 3, 1925, *Fernald, Wiegand & Long 28640* (GH) and *28641* (GH), Sept. 4, 1925, *28642* (GH). **Newfoundland:** Green's Harbor, *Waghorne* (GH); Whitbourne, Aug. 15, 1894, *Robinson & Schrenk 215* (GH, CM, NY, US, MO); Torbay, Aug. 21–26, 1901, *Howe & Lang 1398* (GH, NY—some fruits approaching *C. heterophylla* or *C. verna*); Blomidon Mountains, Bay of Islands, Aug. 22, 1910, *Fernald & Wiegand 3657* (GH); Harbor Grace, July 30, 1911, *Williamson 499* (NY); between Quiddy Viddy Lake and Middle Cove, Aug. 1, 1911, *Fernald & Wiegand 5812* (GH); Killigrew's, Conception Bay, Avalon Peninsula, Aug. 3, 1911, *Fernald & Wiegand 5818* (GH); Brigus Junction, Collier's River, Avalon Peninsula, Aug. 5, 1911, *Fernald & Wiegand 5813* (GH—young fruits approach *C. heterophylla* & *C. verna*); Whitbourne, Rocky River, Avalon Peninsula, Aug. 8, 1911, *Fernald & Wiegand 5815* (GH); Rushy Pond, Exploits River, Aug. 11, 1911, *Fernald & Wiegand 5816* (GH, US); Grand Falls, Exploits River, Aug. 15, 1911, *Fernald & Wiegand 5817* (GH, CM, NY, MO, UC—some with a few fruits approaching *C. heterophylla*); Clarenville, Random Sound, Trinity Bay, Aug. 19, 1911, *Fernald & Wiegand 5814* (GH); Bard Harbor, St. John Bay, Aug. 26, 1925, *Gilbert & Hotchkiss 28638* (GH); Burgeo, Sept. 9, 1926, *Fernald, Long & Fogg 314* (GH); Burgeo, Sept. 10, 1926, *Fernald, Long & Fogg 315* (GH) and *316* (GH); Deer Brook, Bonne Bay, Aug. 26, 1929, *Fernald, Long & Fogg 1850* (GH); Cappa Hayden, Sept., 1934, *Ayre* (GH—some fruits approach *C. heterophylla*). **St.-Pierre et Miquelon:** Yoiles Blanches (Langlade), Sept. 5, 1935, *LeHors* (GH). **Quebec:** River Etamamiou, Charney, Labrador Peninsula, Saguenay Co., Aug. 28, 1915, *St. John 90578* (GH); Fort Chimo area, 58° 07' N, 68° 23' W, Aug. 17, 1948, *Calder 2671* (wis); Richmond Gulf, east coast of Hudson Bay, 56° 10' N, 78° 50' W, Aug. 19, 1944, *Dutilly & Lepage 13248* (wis); Fort Georges, east coast of Hudson Bay, Aug. 25, 1944, *Dutilly & Lepage 13351* (wis); Lac Turgeon, Parc des Laurentides, Charlevoix Co., Aug. 22, 1940, *Desmarais 495* (wis); Kondiaronk, près des sources de la riviere Ouatichouan, Lac Saint-Jean, Aug. 21, 1922, *Victorin 16264* (GH); Lac des Américains, Table-top Mountain, Gaspé Co., Aug. 1, 1906, *Fernald & Collins 234* (GH—TYPE, US, NY); Table-topped Mountain, Gaspé Co., Aug. 4,

1906, *Fernald & Collins 637* (GH) and Aug. 8, 1906, *638* (GH); Tabletop Mts., Aug. 11, 1923, *Fernald, Dodge & Smith 25878* (GH, US, NY, CM) and *25879* (NY); Mt. Tabletop, Aug. 6-9, 1934, *Louis-Marie et al. 34358* (GH); Lac Sainte-Anne, Gaspé Co., July 28, 1930, *Victorin, Rolland & Jacques 33514* (GH); Rivière Petite Cascapedia, Aug. 13, 1930, *Victorin, Rolland & Jacques 33330* (GH); Rivière Cap Chat, Matane Co., Aug. 27, 1923, *Fernald & Smith 25877* (GH); between Mts. Mattaouisse, Fortin and Logan, Matane Co., Aug. 21, 1923, *Fernald & Smith 25879* (GH); Pease Basin between Mts. Logan and Pembroke, Matane Co., Aug. 24, 1923, *Fernald & Smith 25880* (GH); Tadousac Lake, Aug. 8, 1892, *Kennedy ?* (GH); Lake Aylmer, Garthby, Sept. 17, 1940, *Pease 28512* (GH). **Nova Scotia:** Antigonish, Aug. 26, 1924, *Fassett 2285* (GH); Charcoal, Pictou Co., Aug. 2, 1913, *St. John 1432* (GH); Arcadia, Yarmouth Co., July 20, 1920, *Fernald & Long 21763* (GH); Springhaven, Yarmouth Co., Oct. 8, 1920, *Fernald & Linder 21767* (GH); Tusket, Yarmouth Co., July 15, 1920, *Long & Linder 21769* (GH); Tusket Falls, Oct. 7, 1920, *Fernald & Linder 21768* (GH). **Maine:** East Livermore, Androscogin Co., 1887, *Parlin* (NEBC); Lambert Lake, Washington Co., Sept. 1, 1908, *Fernald* (NEBC); Rangeley Lake, Franklin Co., Aug., 1894, *Furbish* (NEBC); South Poland, Sept. 3, 1893, *Furbish* (NEBC); Edmunds, Washington Co., Aug. 18, 1928, *Knowlton* (NEBC). **New Hampshire:** White Mountains, in Saco River, *Tuckerman* (GH, approaching *C. heterophylla* and with comment by Engelmann—"I am at a loss about this plant, and should like to see more of it. It has the rounded plump fruit of *C. Asae Grayi*, but much larger than all the forms of this plant I have examined, besides it comes from a Region much north of the Habitat of *Asae Grayi*, and mountainous too, where I would expect only *C. verna*. G. E. Sept. 1864;" NY); Saco River, Willey House, Carroll Co., Aug. 31, 1937, *Fassett 18822* (NEBC, WIS); Ravine House Pond, Randolph, Coös Co., Sept. 2, 1925, *Pease 19895* (NEBC); Watson Pond, Randolph, Sept. 20, 1904, *Pease 4170* (NEBC); S. Lake, Carter Notch, Bean Purchase, Coös Co., Aug. 2, 1932, *Pease 22999* (NEBC, GH); brook near Lake Winnepesaukee, Alton, Aug. 4, 1909, *Sargent 84* (GH—approaching *C. heterophylla* in some fruits); Newport, Sept. 15, 1899, *Robinson 913* (GH); Dismal Pool, White Mts., Aug. 26, 1882, *Faxon* (GH, NEBC marked "near Glen Ellis . . . Pinkham Notch"); Peterboro, Hillsboro Co., Aug. 10, 1909, *Deane & Batchelder* (NEBC); Rindge, Aug. 8, 1918, *Batchelder* (NEBC). **Vermont:** Lake of the Clouds, Mt. Mansfield, Aug. 6, 1877, *Faxon* (GH). **Massachusetts:** pond on summit of Mt. Wachusett, Princeton, Aug. 8, 1894, *Collins* (GH); Mt. Wachusett, Aug. 16, 1894, *Bailey* (NEBC). **New York:** Colton Flow, Raquette River, St. Lawrence Co., Sept. 2, 1933, *Muenschler & Clausen 3910* (GH). **Georgia:** Little Stone Mountain, shallow pools along Covington Road, 20 miles east of Atlanta, DeKalb Co., April 17, 1936, *Svenson 7507* (GH). **Utah:** Diamond Lake west of Bald Mountain, Aug. 10, 1941, *Harrison 10461* (UC); Duck Lake, N. W. slope Lamotte Peak, Summit Co., Aug. 15, 1933, *Hermann 5929* (MO, UC—identification not positive). **Alaska:** Smith's Dry Lake, Attu Is., Aleutians, Sept. 14, 1945, *Hardy 387* (UC, MO); Seward Peninsula, north coast, Buckland River, 26 miles above delta, 66° N., 161° 4' W., Sept. 7-10, 1926, *Porsild & Porsild 1595* (US). **Washington:** Mt. Ranier, alt. 5500 ft., Oct. 14, 1895, *Allen 185* (NY, US, GH, MO, CM, UC).

In reporting *C. anceps* from Mt. Mansfield, Vermont, its author¹ wrote: "In the original discussion the following possibly

¹ RHODORA 35: 185-186. 1933.



16. *C. anceps* (also in the Aleutian Islands).

helpful phrase occurs: 'distinguished from *C. heterophylla* by its small size, uniform foliage, ancipital stem, and promptly deciduous styles.' Subsequently plants with dilated foliage have been found but the ancipital stems and caducous styles are distinctive." The ancipital stems may be distinctive in the fresh plants, but in both *C. anceps* and *C. heterophylla*, as well as in most of the Sect. Callitriche, the stems press very flat and thin with the

central cylinder easily distinguishable; in the pressed condition no difference can be seen except that the stem of *C. anceps* averages a little more slender than that of *C. heterophylla*. Styles may be either caducous or persistent in both species. That *C. anceps* is generally smaller and more delicate than *C. heterophylla* may be seen from a comparison of Figs. 1-9, Plate 1168, with Figs. 1-10, Plate 1169, however, this difference is not such that it can be reduced to contrasting measurements of widths of leaves or thicknesses of stems.

The most fundamental difference between *C. heterophylla* and *C. anceps* appears to be in the shape of the fruit. In the former, the fruit is slightly narrower below the middle than above the middle (Figs. 13a, 13d, 13e, 13g, 13m, 13x) while in *C. anceps* they are essentially the same width below as above the middle (Figs. 16b, 16d, 16f, 16h, 16i). Magnification of 15-20 times is necessary for proper observation of this character. At least as much magnification is also necessary to examine the tips of the linear submersed leaves, whose veins are slightly more excurrent in *C. anceps* (Fig. 16e) and *C. hamulata* (Fig. 15d) than in *C. heterophylla* (Figs. 13h, 13s, 13An, 13Ao).

C. anceps has been confused with *C. hamulata* and *C. verna* in Greenland. In Newfoundland, it has commonly been identified as *C. heterophylla*, and most of what has been called *C. heterophylla* in Nova Scotia proves to be *C. anceps*.

While most *C. anceps* is sufficiently distinct from *C. heterophylla* on these fundamental, albeit minute, characters, a few individuals in Newfoundland and in New Hampshire show some approach to *C. heterophylla*. Sometimes this is due to distortion of young fruits in pressing, but occasionally mature fruits are intermediate, or approach both forms on the same plant. Conversely, much of the *C. heterophylla* from the Pocono Plateau in Pennsylvania shows a strong tendency toward *C. anceps*.

To a large extent, *C. anceps* combines the characters of the northern and European *C. hamulata* with the more southern *C. heterophylla*; the shape of the fruit, the nature of the leaf tip, and the general slenderness of the plants are a close match for the former, while the ascending styles and lack of wing on the carpels agrees with the latter.

17. ***C. nubigena***, n. sp., fructibus subrotundis, 0.7–1.2 mm. diametro, sessilibus vel subsessilibus; mericarpellis nitidis, marginibus angulatis non alatis. —Fruit nearly round (Figs. 17a, 17e), 0.7–1.2 mm. in diameter, sessile or nearly so; faces of mericarps rather plump (Figs. 17b, 17f), and margins angled but not winged; commissural groove widely V-shaped; aquatic forms with long lax stems and submersed linear 1-nerved leaves, submersed spatulate leaves, and submersed or floating rotund petioled leaves occurring in different combinations on different plants; subterrestrial plants mat-like on the mud, with spatulate or oblanceolate or obovate leaves. — **Colombia**: Department Santander: pool on paramo, Alto del Almorzadero, north of Cerrito, alt. 12000 ft., Oct. 12, 1944, *Fassett 25918* (TYPE in MO; ISOTYPE in GH), and *25916* (WIS, CM, NY, US, MO); aquatic form in 20 cm. water, pool in pasture, "Moravia," a level valley northeast of LaBelleza, valley of Rio Minero near Florian, alt. 7000 ft., Sept. 26, 1944, *Fassett 25808* (GH, MO), and subaquatic form, *25809* (GH, MO), and terrestrial form on mud, *25807* (GH, MO); small shallow pool, half-way between Sucre and LaBelleza, alt. 7650 ft., Sept. 25, 1944, *Fassett 25796* (WIS, UC, US, CM).

These collections are from two regions about 125 miles apart, and perhaps represent two species if we may judge from the sizes of the fruits. Collections nos. 25918 and 25916 are from the Alto del Almorzadero, some 35 miles southeast of Bucaramanga. Here is treeless paramo at 12000 feet elevation, bleak, cold and fog-drenched. The plants grew in a pool not over 100 feet across. The fruits on these collections are from 9–12 mm. high and wide.

The other collections are from a region called "Moravia," about 25 miles southwest of Vélez. The elevation is only about 7000 feet. The valley has low eroded sandstone cliffs along the sides, and the valley-floor is flat with a meandering stream with steeply cut banks and occasional old oxbows. The sides are wooded, while the floor is more open and pastured, with pools or sedge and marsh vegetation in the oxbows. To the writer's eye, the superficial resemblance to the valleys in Wisconsin's Driftless Area was striking. The *Callitriche*, growing in and around a shallow oxbow pool, has fruits only 0.7–0.8 mm. high and wide.

The difference in size of fruits is consistent with differences between some species. On the other hand, this variation is well within the size ranges in *C. heterophylla* in California. With effectively only two collections available it seems wiser to take the more conservative course at present.

18. ***C. Lechleri*** (Hegelm.) n. comb. *C. marginata* γ *Lechleri* Hegelm. Verhandl. Bot. Ver. Brandenburg 9: 12. 1867.—Fruit 1.0–1.4 mm. wide, 1.0–1.2 mm. high, the width equalling or, more frequently, slightly exceeding the

height; carpels distinctly winged (Figs. 18a, 18d, 18e, 18g, 18k); mericarps with plump faces (Figs. 18b, 18e, 18f, 18h) and with a wide V-shaped commissural groove; leaves and habit variable, essentially as described under *C. heterophylla*.

- a. Fruits sessile or nearly so. *C. Lechleri* var. *Lechleri*.
 a. Fruits peduncled. *C. Lechleri* var. *Berteroana*.

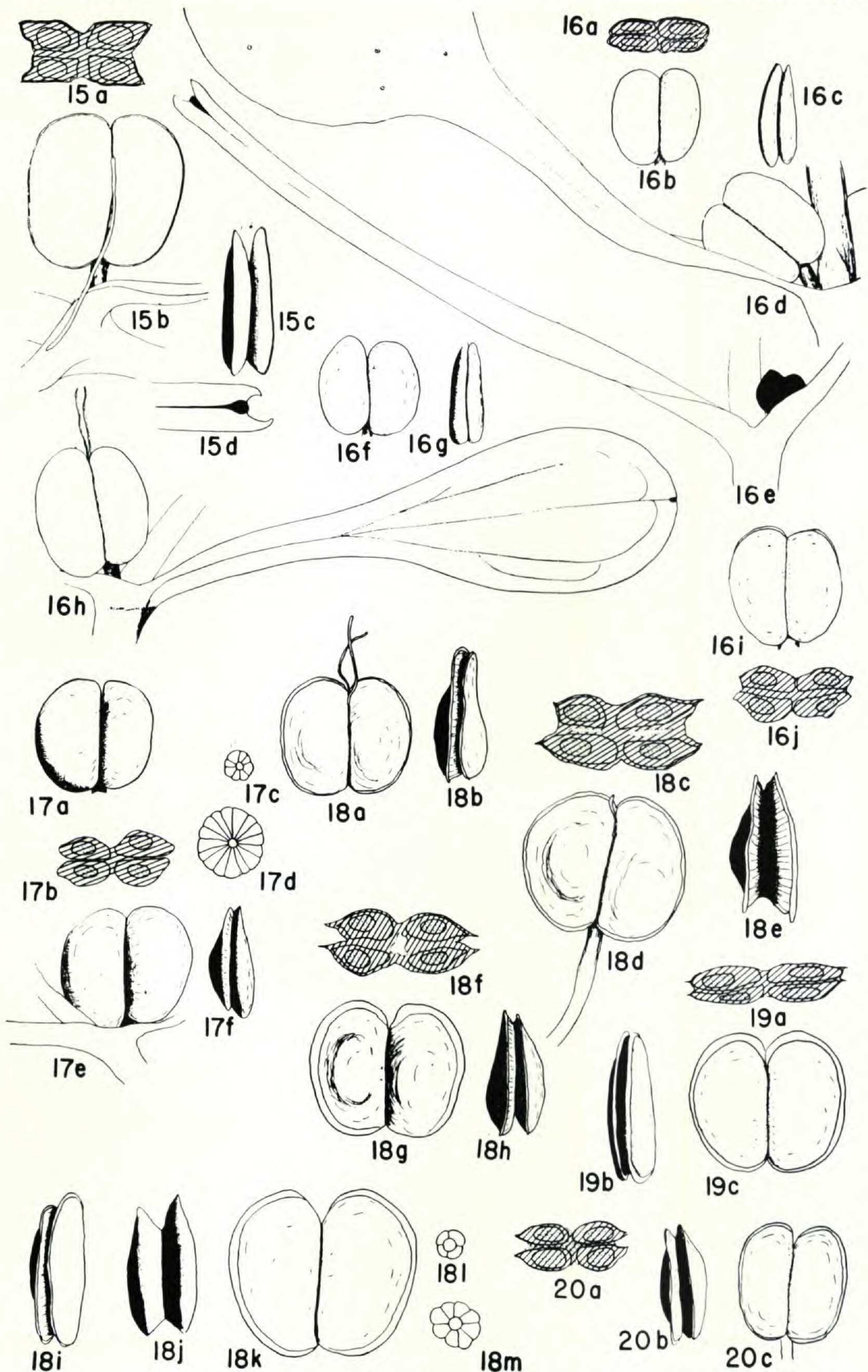
C. Lechleri var. **Lechleri**. *C. marginata* γ *Lechleri* Hegelm. l. c.—Central and southern Chile and adjacent Argentina.—**Chile**: Rancagua, May, June, 1828, *Bertero 142* (MO, GH, NY—COTYPES); 40 Kilom. al Este de Valparaíso, January, 1916, *Jaffuel 357* (GH, mixed with var. *Berteroana*); San Miguel, Concepcion, Nov. 11, 1933, *Barros 125* (GH); Temuco, Prov. Cautin, about 120 m. alt., Dec. 15, 1935, *Montero 2589* (GH); Valdivia, ex herb. John Ball (GH); Costa, Nov. 4, 1920, *Claude-Joseph 1232* (US); Volcan Tolguaca, Prov. Malleco, Feb. 23–25, alt. 1200 m., *Pennell 12795* (CM). **Argentina**: Cordilleras del Chubut, Feb., 1903, *Illin* (UC); Rio Corcovado, Territorio del Chubut, March 8, 1901, *Illin 113* (SP); Prov. Magallanes, Jan., 1931, *Hicken 487* (GH); región del Lago Nahuel Huapí, Bariloche, Feb. 12, 1940, *Cabrera 6097* (LP).

C. Lechleri var. **Berteroana** (Hegelm.) n. comb. *C. Berteroiana* Steud. Nom. ed. 2, 1: 259. 1840, *nomen nudum* but a type cited. *C. marginata* β *Berteroana* Hegelm. l. c. *C. Berteroana* Steud. ex Hegelm. l. c., in synonymy.—**Central Chile**:—Rancagua, *Bertero 141* (ISOTYPE of *C. Berteroiana* Steud.—GH, MO); without locality, *Gay* (MO); 40 Kilom. al Este de Valparaíso, Jan. 1916, *Jaffuel 357* (GH, mixed with var. *Lechleri*); Valle de Marga-Marga, Prov. Aconcagua, southeasterly from Valparaíso, *Jaffuel & Pirion 3208* (GH).

 PLATE 1174

(Numbers same as in keys and descriptions)

15. *C. hamulata*. 15a. Cross-section of fruit, $\times 30$. Greenland, *Porsild* on 13 Aug. 1932 (US). 15b. Face of fruit, portion of stem and leaves, $\times 30$. Same collection. 15c. Edge view of fruit, $\times 30$. Same collection. 15d. Leaf tip, $\times 30$. Same collection.
 16. *C. anceps*. 16a. Cross-section of fruit, $\times 30$. Quebec, *Fernald, Dodge & Smith 25878* (GH). 16b. Face of fruit, $\times 30$. Same collection. 16c. Edge view of fruit, $\times 30$. Same collection. 16d. Face of fruit, and part of leaf and stem, $\times 30$. New Hampshire, *Robinson* (GH). 16e. Young fruit, part of stem, and linear 1-nerved leaf, $\times 30$. Quebec, *Fernald & Smith 25877* (GH). 16f. Face of fruit, $\times 30$. Labrador, *Fernald & Long 28642* (GH). 16g. Edge view of fruit, $\times 30$. Same collection. 16h. Face of fruit, leaf and portion of stem, $\times 30$. Nova Scotia, *Fernald & Linder 21767* (GH). 16i. Face of fruit, $\times 30$. New Hampshire, *Faxon* (GH). 16j. Cross-section of fruit, $\times 30$. Same collection.
 17. *C. nubigena*. 17a. Face of fruit, $\times 30$. Colombia, *Fassett 25807* (WIS). 17b. Cross-section of fruit, $\times 30$. Colombia, *Fassett 25918* (WIS). 17c. Peltate scale from leaf, $\times 187.5$. Colombia, *Fassett 25796* (WIS). 17d. Peltate scale from leaf, $\times 187.5$. Same collection. 17e. Face of fruit, $\times 30$. Colombia, *Fassett 25918* (WIS). 17f. Edge view of fruit, $\times 30$. Same collection.
 18. *C. Lechleri*. 18a. Face of fruit, var. *Lechleri*, $\times 30$. Chile, *Barros 125* (GH). 18b. Edge view of fruit, $\times 30$. Same collection. 18c. Cross-section of fruit, var. *Berteroana*, $\times 30$. Chile, *Jaffuel & Pirion 3208* (GH). 18d. Face of fruit, $\times 30$. Same collection. 18e. Edge view of fruit, $\times 30$. Same collection. 18f. Cross-section of fruit, var. *Berteroana*, $\times 30$. Chile, *Jaffuel 357* (GH). 18g. Face of fruit, $\times 30$. Same collection. 18h. Edge view of fruit, $\times 30$. Same collection. 18i. Edge view of fruit, var. *Berteroana*, $\times 30$. Chile, *Bertero 141* (GH). 18j. Edge view of fruit, $\times 30$. Same collection. 18k. Face of fruit, $\times 30$. Same collection. 18l. Peltate scale from leaf, $\times 187.5$. Same collection. 18m. Peltate scale from leaf, $\times 187.5$. Same collection.
 19. *C. trochlearis*. 19a. Cross-section of fruit, $\times 30$. California, *Harris, Tracy & Yates 3454* (US). 19b. Edge view of fruit, $\times 30$. Same collection. 19c. Face of fruit, $\times 30$. Same collection.
 20. *C. oblongicarpa*. 20a. Cross-section of fruit, $\times 30$. Argentina, *Parodi 8571* (GH). 20b. Edge view of fruit, $\times 30$. Same collection. 20c. Face of fruit, $\times 30$. Same collection.



CALLITRICHE. 15, *C. XAMULATA*. 16, *C. ANCEPS*. 17, *C. NUBIGENA*. 18, *C. LECHLERI*. 19, *C. TROC. LEARIS*. 20, *C. OBLONGICARPA*.